

Viral Enteropathogens Infectious Diseases Report 2016

Enteric viruses are a major cause of acute gastroenteritis, especially among young children¹ as well as responsible for outbreaks in both health care and other institutions. Traditional diagnosis relied on antigen tests, however, newer multiplex molecular assays allow rapid detection of multiple enteric viruses.¹⁻³ In February 2016, viral enteropathogen multiplex PCR was introduced at Sullivan Nicolaides Pathology replacing the previously available antigen tests. Testing for viral enteropathogens at SNP is performed on request (Table 1).

The current multiplex PCR in use (the Seegene Allplex™ Gastrointestinal Virus real-time PCR platform) simultaneously detects norovirus (GI/GII), rotavirus, astrovirus, adenovirus 40/41 and sapovirus. All Australian states offer a funded rotavirus immunisation programme which commenced in July 2007. The current assay will detect vaccine derived rotavirus. Detection of vaccine derived rotavirus can occur at least 1-4 weeks after each dose and on occasions persist for 14 weeks.⁴ Co-pathogen detection is not uncommon and the clinical significance of each in a given illness requires clarification.

Patient information links are available on the [snp website](#).

Figure 1: Total viral enteropathogens testing by week and current year

Figure 2: Distribution of all viral enteropathogens by week and current year

Figure 3: Distribution of viral enteropathogens by age group and current year

Figure 4a: Distribution of Norovirus G1 and G2 by age group and % positivity

Figure 4b: Distribution of Rotavirus by age group and % positivity

Figure 4c: Distribution of Adenovirus by age group and % positivity

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Figure 4e: Distribution of Sapovirus by age group and % positivity

Figure 5a: Distribution of Norovirus G1 and G2 by week and % positivity

Figure 5b: Distribution of Rotavirus by week and % positivity

Figure 5c: Distribution of Adenovirus by week and % positivity

Figure 5d: Distribution of Astrovirus by week and % positivity

Figure 5e: Distribution of Sapovirus by week and % positivity

Figure 6: Distribution of all viral enteropathogens by year and % positivity for each viral enteropathogen

Figure 7: Co-pathogen detection

Table 1: Additional faecal processing at SNP including enteric viral PCR

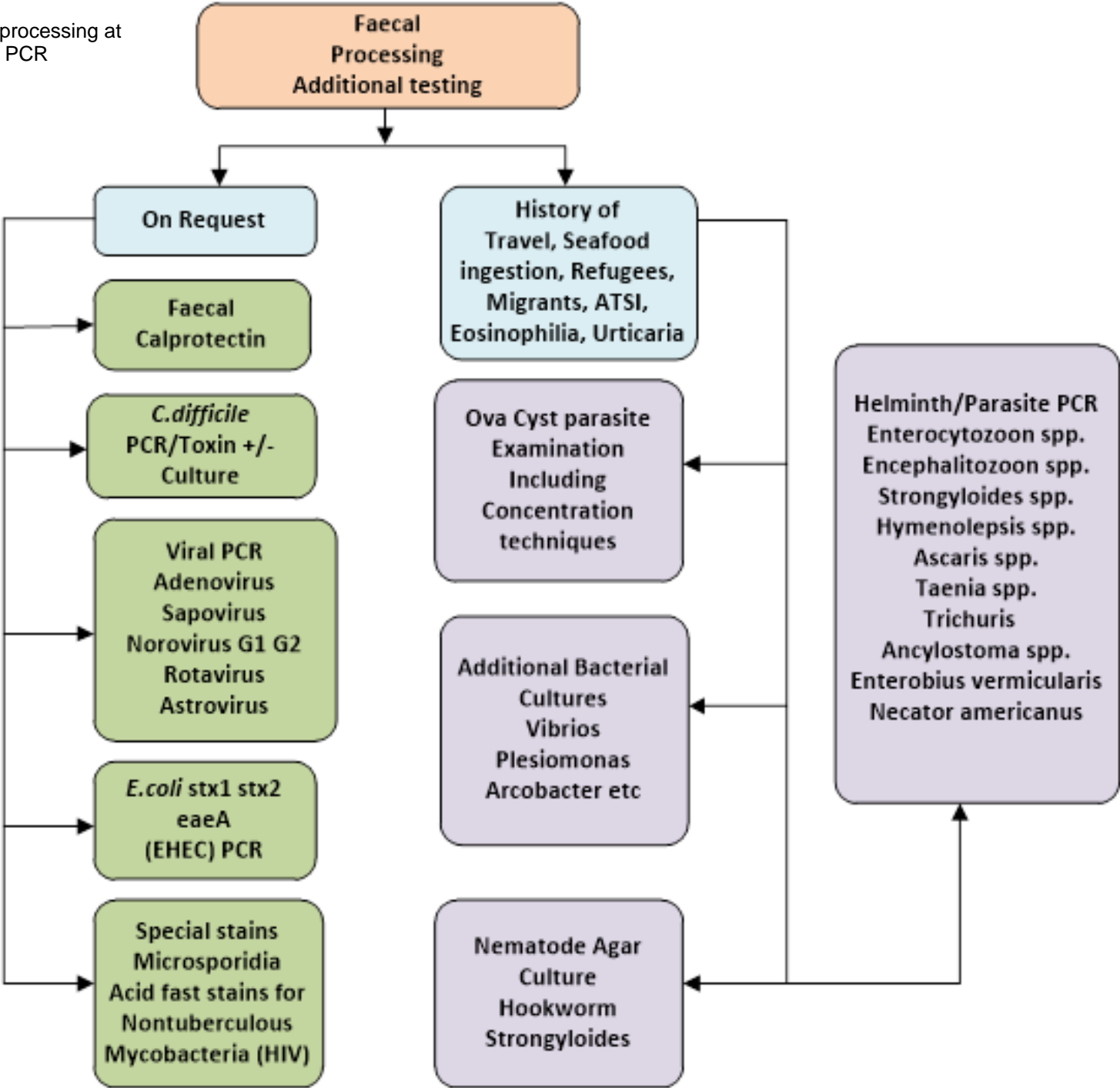


Figure 1: Total viral enteropathogens testing by week and % positivity (one or more) - 2016
Total episodes = 5752, Total episodes PCR + (one or more) = 1172

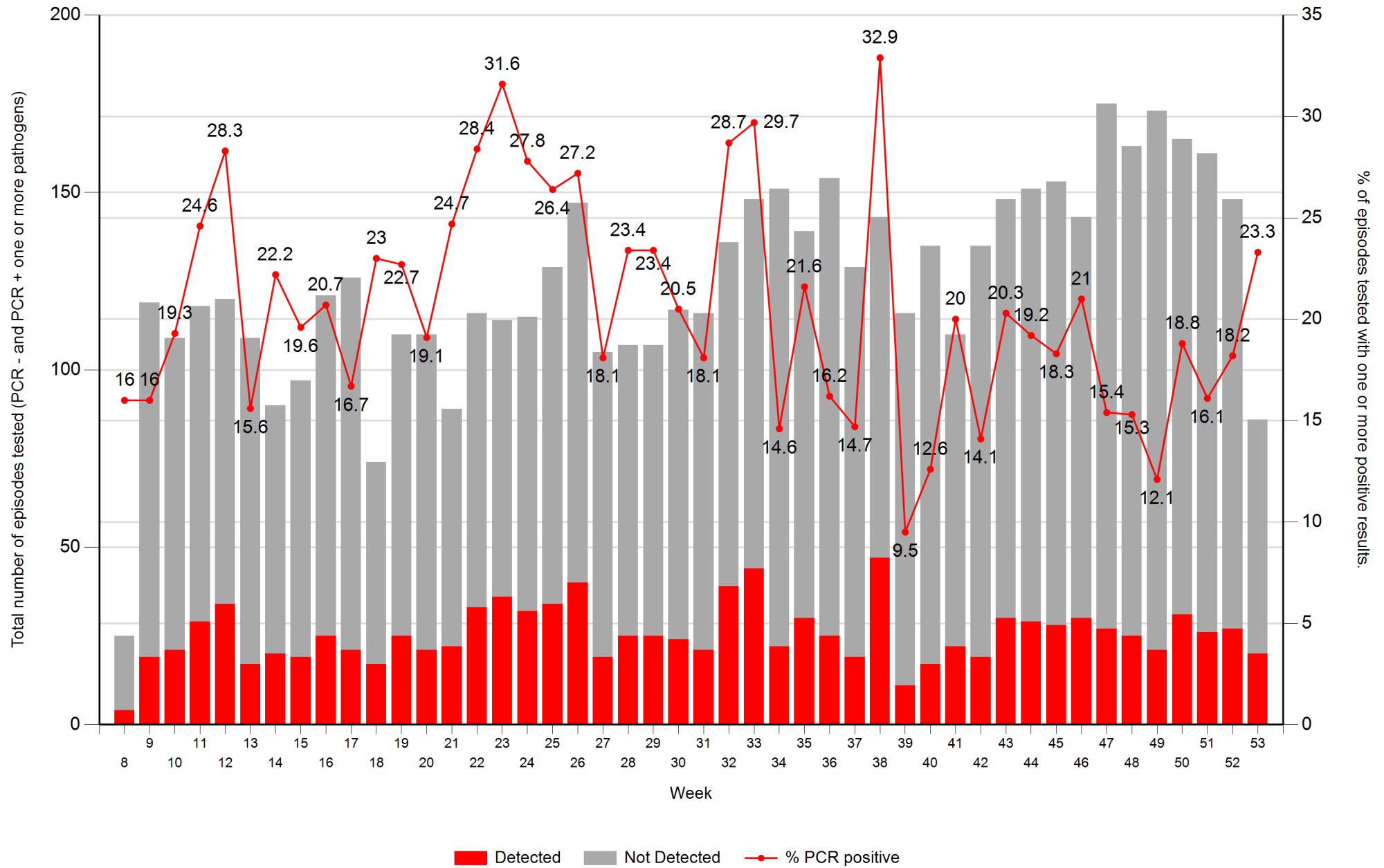
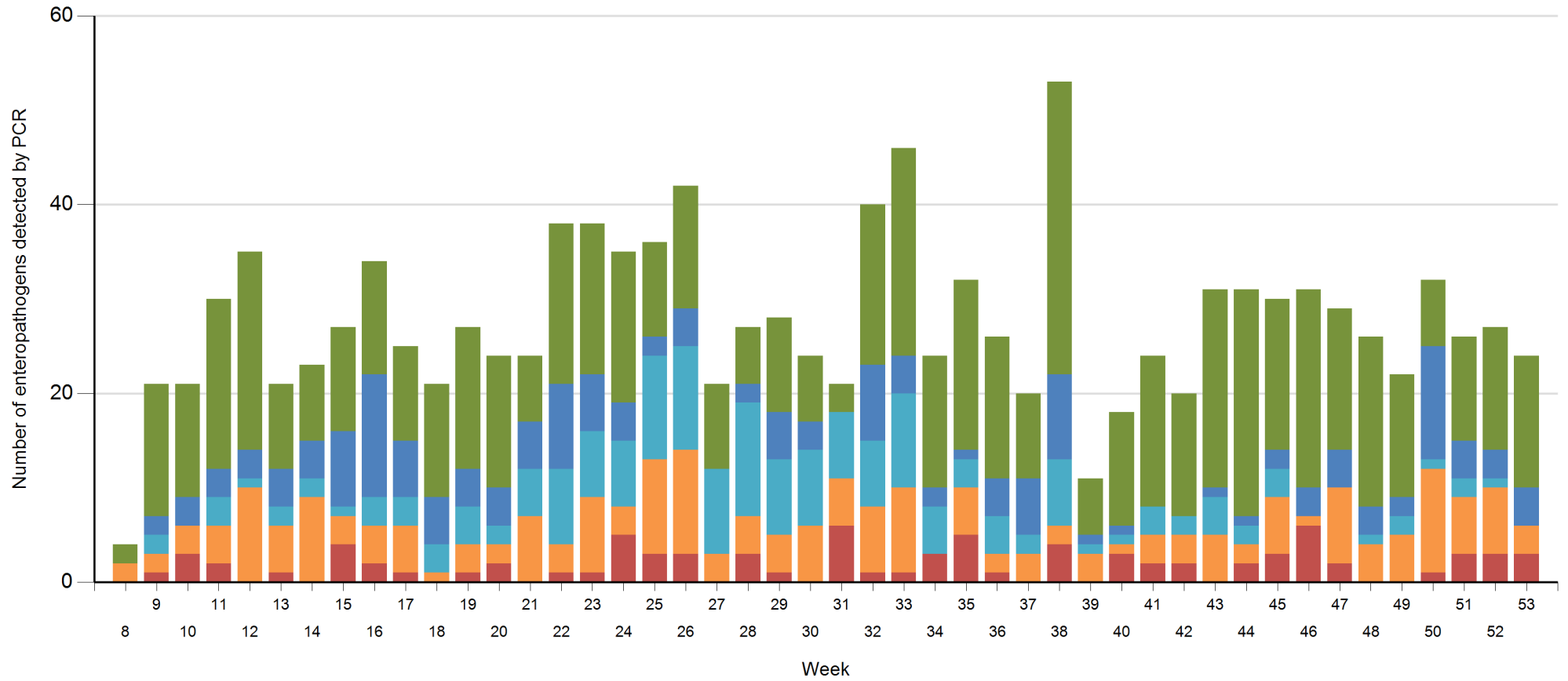
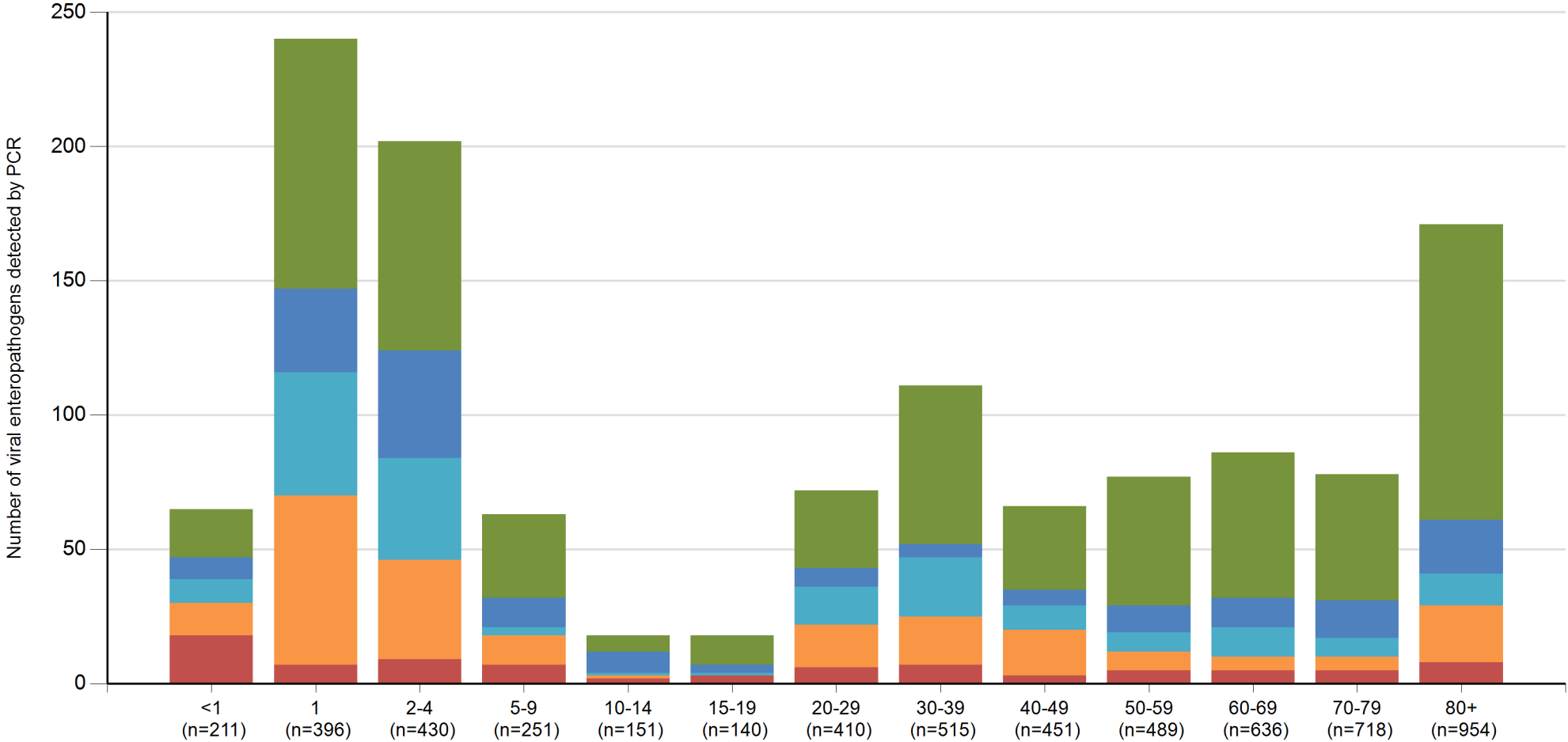


Figure 2: Distribution of all viral enteropathogens by Week - 2016



Week	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Rotavirus		1	3	2		1		4	2	1		1	2		1	1	5	3	3		3	1		6	1	1	3	5	1		4		3	2	2		2	3	6	2			1	3	3	3
Sapovirus	2	2	3	4	10	5	9	3	4	5	1	3	2	7	3	8	3	10	11	3	4	4	6	5	7	9		5	2	3	2	3	1	3	3	5	2	6	1	8	4	5	11	6	7	3
Astrovirus		2		3	1	2	2	1	3	3	3	4	2	5	8	7	7	11	11	9	12	8	8	7	7	10	5	3	4	2	7	1	1	3	2	4	2	3			1	2	1	2	1	
Adenovirus		2	3	3	3	4	4	8	13	6	5	4	4	5	9	6	4	2	4		2	5	3		8	4	2	1	4	6	9	1	1			1	1	2	3	4	3	2	12	4	3	4
Norovirus	2	14	12	18	21	9	8	11	12	10	12	15	14	7	17	16	16	10	13	9	6	10	7	3	17	22	14	18	15	9	31	6	12	16	13	21	24	16	21	15	18	13	7	11	13	14

Figure 3: Distribution of viral enteropathogens by age group - 2016



Rotavirus	18	7	9	7	2	3	6	7	3	5	5	5	8
Sapovirus	12	63	37	11	1	0	16	18	17	7	5	5	21
Astrovirus	9	46	38	3	1	1	14	22	9	7	11	7	12
Adenovirus	8	31	40	11	8	3	7	5	6	10	11	14	20
Norovirus	18	93	78	31	6	11	29	59	31	48	54	47	110

Figure 4a: Distribution of Norovirus G1 and G2 by age group and % positivity - 2016



Figure 4b: Distribution of Rotavirus by age group and % positivity - 2016

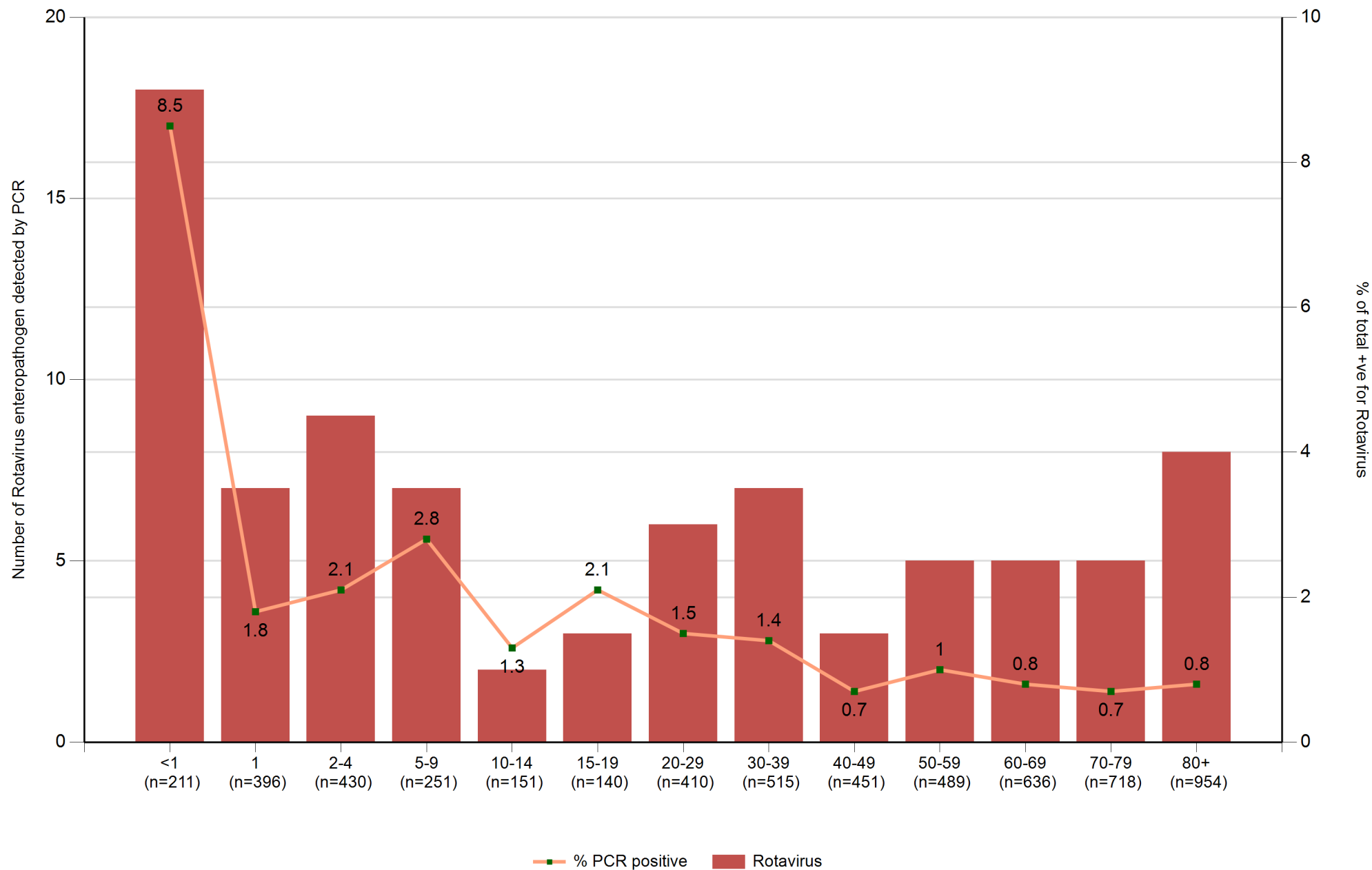


Figure 4c: Distribution of Adenovirus by age group and % positivity - 2016

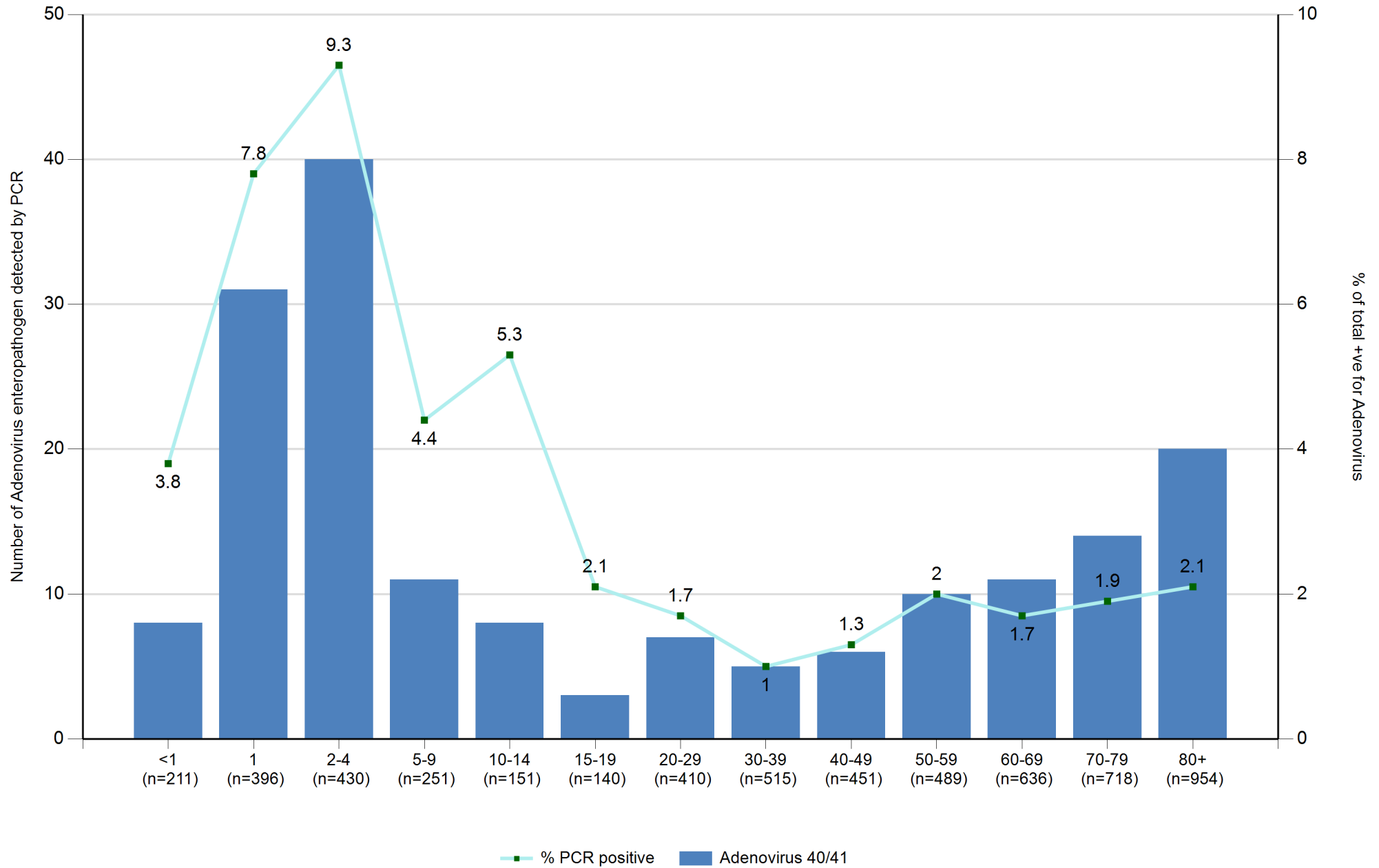


Figure 4d: Distribution of Astrovirus by age group and % positivity - 2016

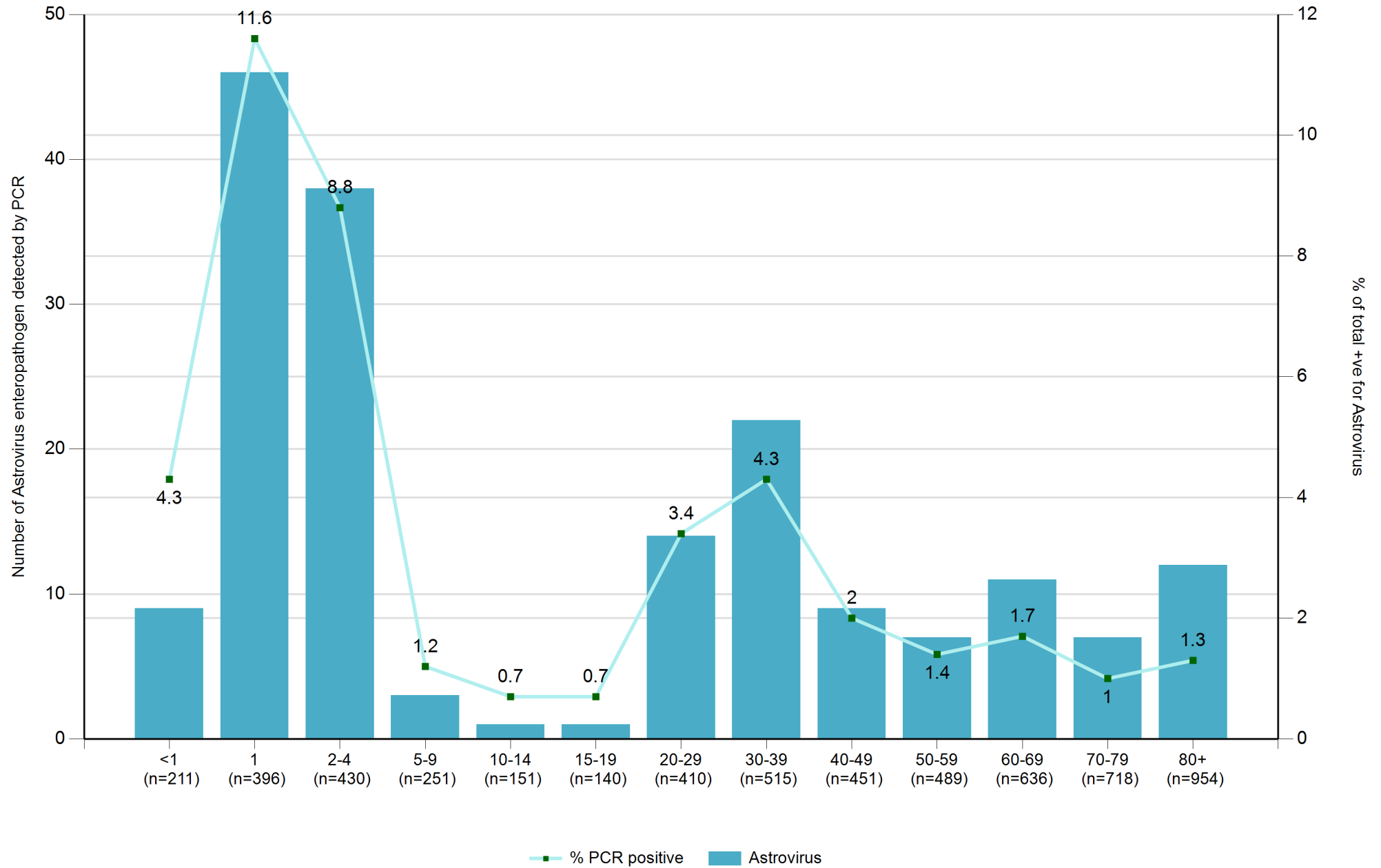


Figure 4e: Distribution of Sapovirus by age group and % positivity - 2016

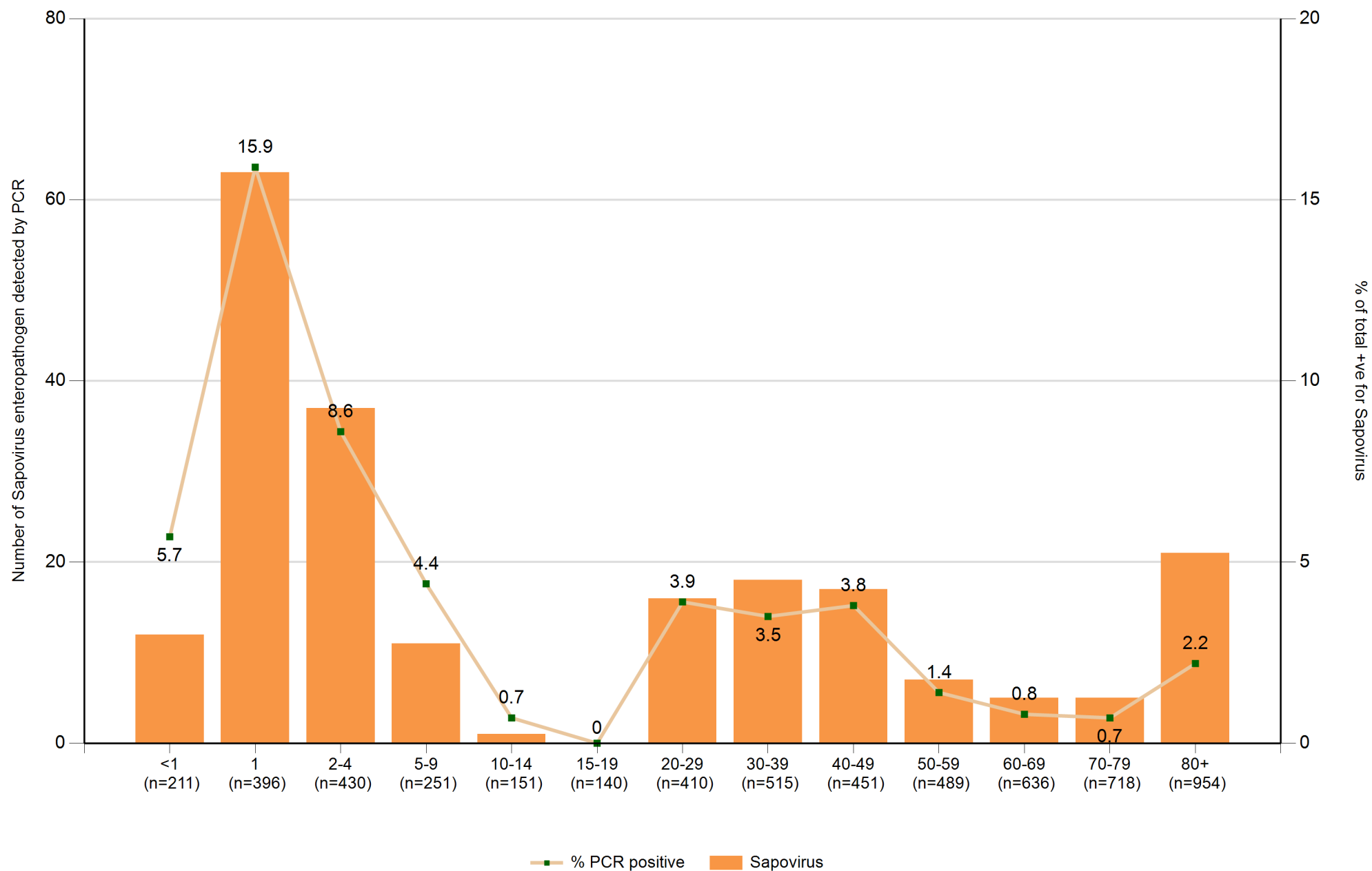


Figure 5a: Distribution of Norovirus G1 and G2 by week and % positivity (G1 and or G2) - 2016

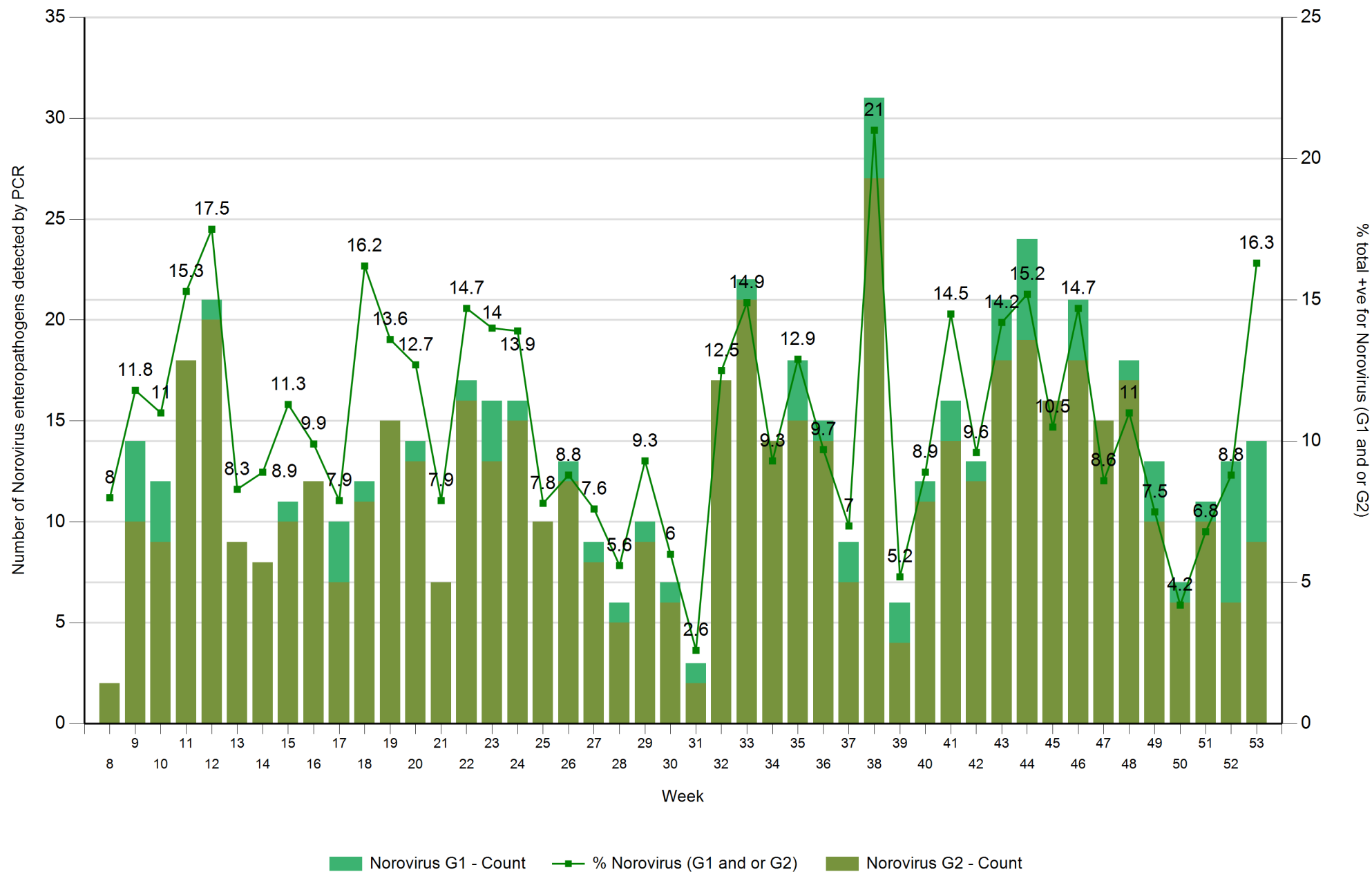


Figure 5b: Distribution of Rotavirus by week and % positivity - 2016

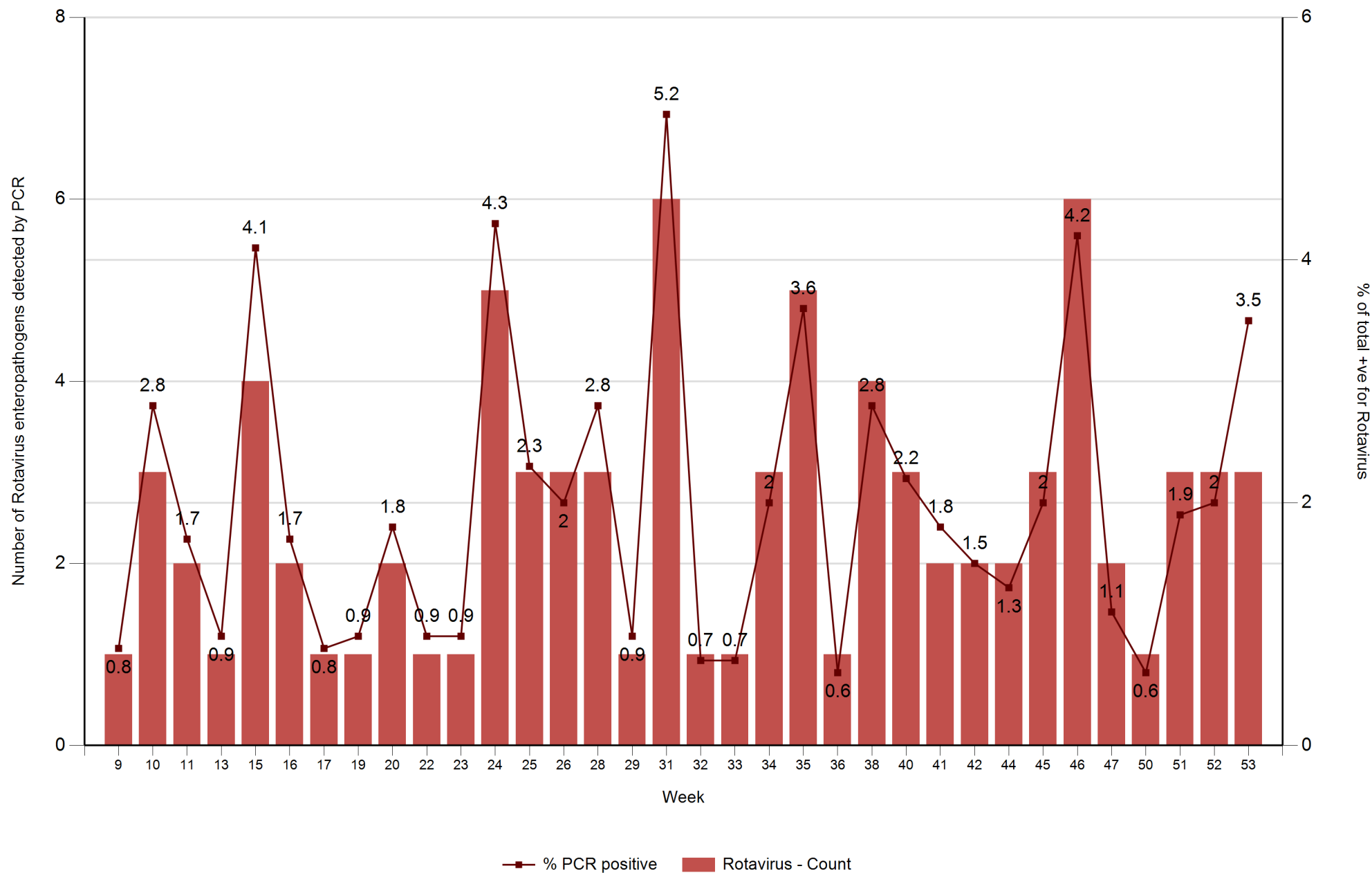


Figure 5c: Distribution of Adenovirus by week and % positivity - 2016

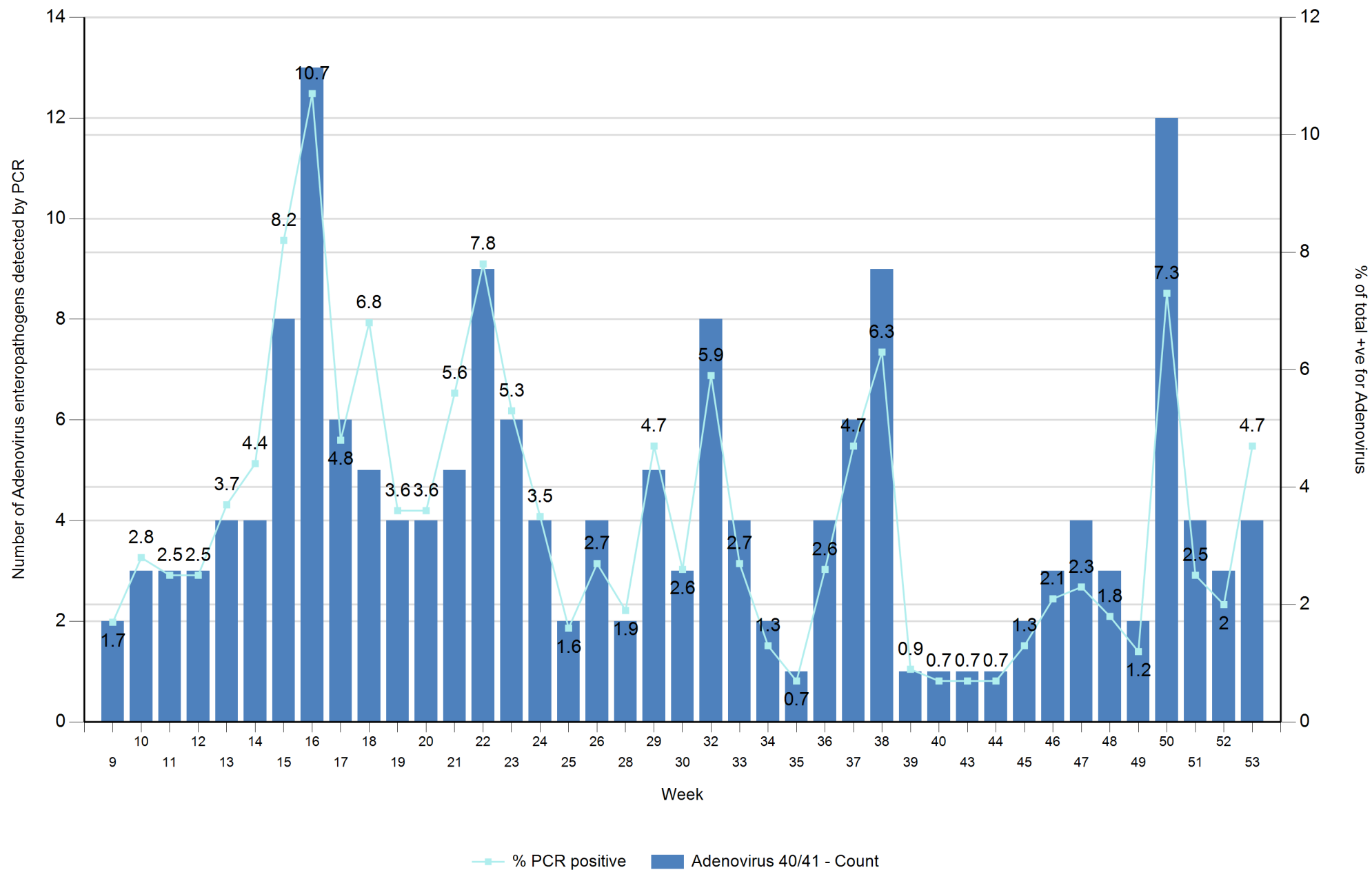


Figure 5d: Distribution of Astrovirus by week and % positivity - 2016

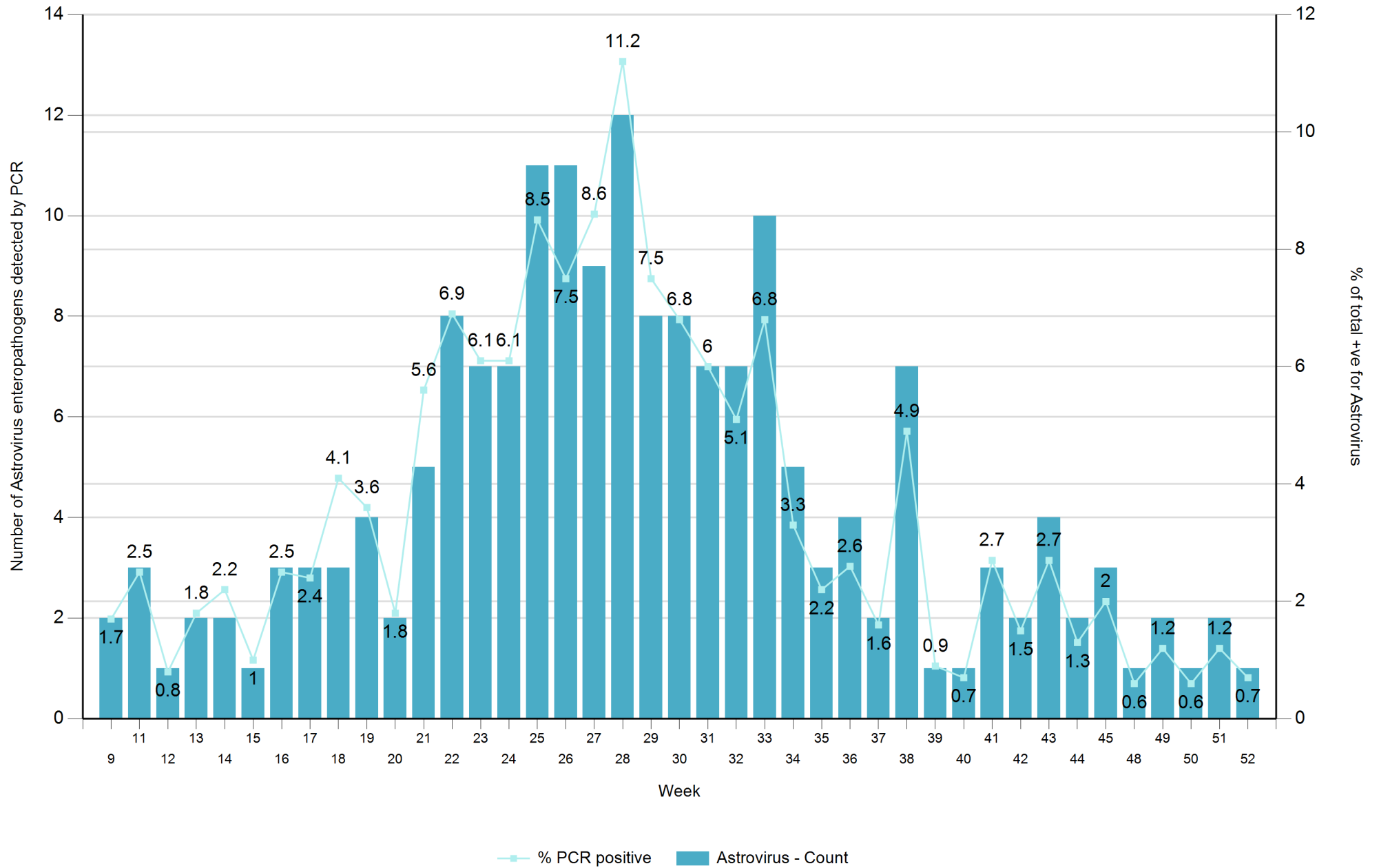


Figure 5e: Distribution of Sapovirus by week and % positivity - 2016

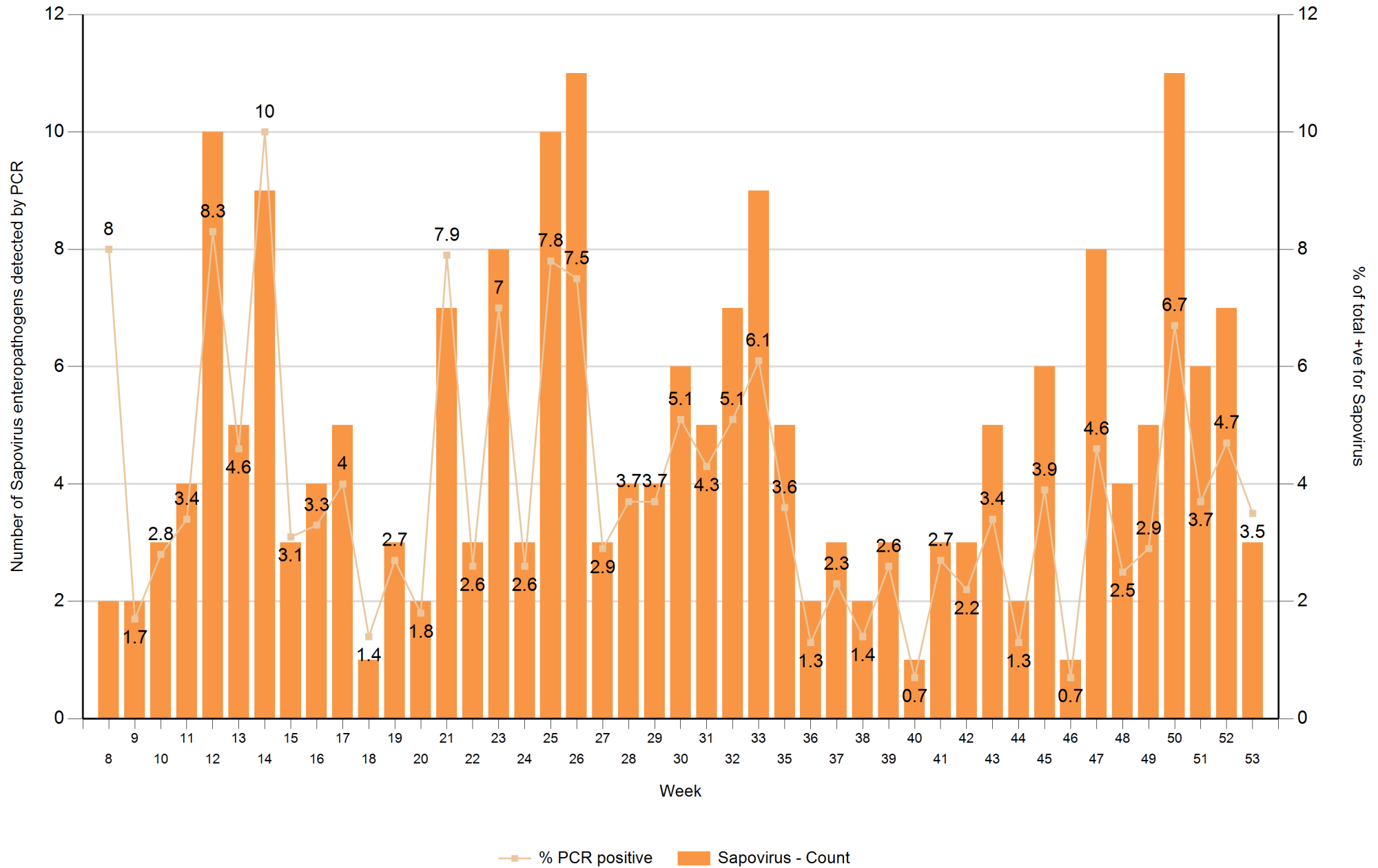


Figure 6: Distrubution of virus by year and % positivity

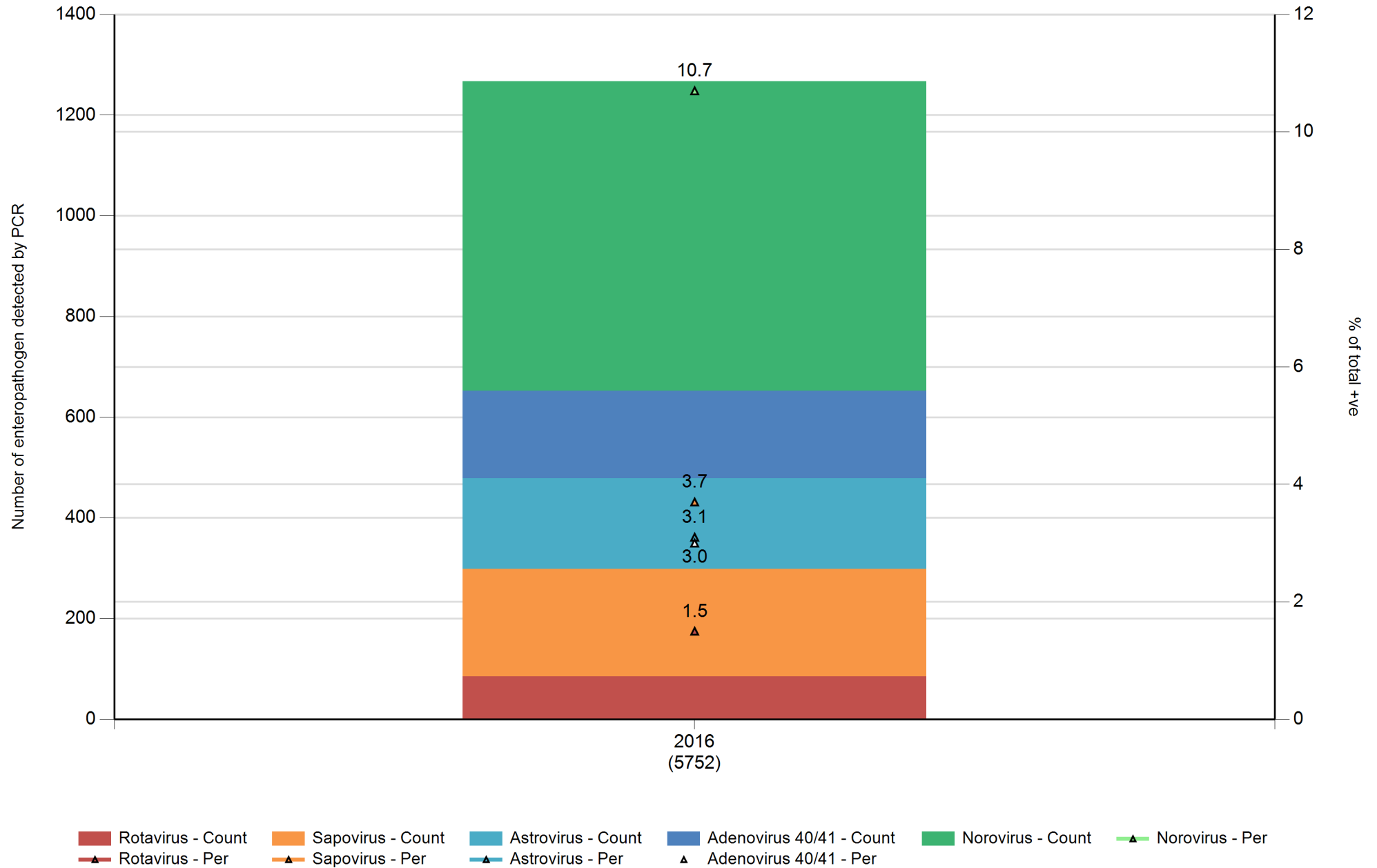


Figure 7: Co-pathogen detection - 2016	
Total number of episodes positive (one or more)	1171
1 x pathogen total	1079
Sapovirus	188
Rotavirus	71
Norovirus	551
Astrovirus	146
Adenovirus	123
2 x pathogen total	89
Sapovirus, Rotavirus	1
Norovirus, Sapovirus	9
Norovirus, Rotavirus	6
Norovirus, Astrovirus	17
Norovirus, Adenovirus	30
Astrovirus, Sapovirus	5
Astrovirus, Rotavirus	3
Adenovirus, Sapovirus	7
Adenovirus, Rotavirus	4
Adenovirus, Astrovirus	7
3 x pathogen total	3
Norovirus, Adenovirus, Sapovirus	2
Adenovirus, Astrovirus, Sapovirus	1

References

1. Binnicker MJ. Multiplex Molecular Panels for Diagnosis of Gastrointestinal Infection: Performance, Result Interpretation, and Cost-Effectiveness. Journal of Clinical Microbiology. 2015;53(12):3723-8.
2. Khare R, Journal of Clinical Microbiology 2014;52(10):3667-73, et al. Comparative evaluation of two commercial multiplex panels for detection of gastrointestinal pathogens by use of clinical stool specimens.
3. McAuliffe GN, et al. Systematic application of multiplex PCR enhances the detection of bacteria, parasites, and viruses in stool samples. The Journal of Infection. 2013;67(2):122-9.
4. Whiley DM, et al Over diagnosis of rotavirus infection in infants due to the detection of vaccine virus. Clinical Infectious Diseases 2019 December 18.

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